

CLAIMS

1. A method of screening mammalian donor tissues for predisposition to rejection, the method comprising the steps of determining the level of expression of an endogenous telomere-binding protein in the donor tissue, and comparing the determined level to a reference level of expression, altered levels of expression in the donor tissue being indicative of a predisposition to rejection.

2. The method of claim 1, wherein the method is carried out on a donor tissue previously removed from a donor body.

3. The method of claim 1 or claim 2, wherein the mammalian tissue is human tissue.

4. The method of any preceding claim wherein the tissue is renal tissue.

5. The method of any preceding claim wherein the method comprises determining the expression level at least two telomere binding proteins.

6. The method of claim 5 wherein the method comprises determining the expression level of at least three telomere binding proteins.

7. The method of any preceding claim wherein the telomere binding protein is selected from the group comprising G22P1, XRCC5, hPOT1, and SIRT2, and their homologues or analogues.

8. The method of any preceding claim wherein the telomere binding protein is selected from the group

comprising Rif1, Rif2, Rap1, SIRT1, 3, 4, 5, 6, 7, 8, Est1, Est2, TLG1, cdc13, A26, ATM, HDAC1, hSEP1, hTEP1, HuCds1, MYC, NEK2, p21, PIN2, TNKS, TERC, hTERT, TOP2A, TOP2B, TP53, TRF1, TRF2, and WRN.

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9. The method of any preceding claim wherein the reference level of expression is determined substantially at the same time as the donor tissue level of expression.

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10. The method of any preceding claim wherein the reference level of expression is determined from a healthy tissue sample.

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11. A kit for screening mammalian donor tissues for predisposition to rejection, the kit comprising reagents for determining the level of expression of at least one endogenous telomere binding protein in the donor tissue.

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12. The kit of claim 11, wherein the kit comprises PCR primers for detection of mRNA encoding said telomere binding protein or proteins.

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13. The kit of claim 11 or 12 wherein said protein or proteins is/are selected from the group comprising G22P1, XRCC5, hPOT1, and SIRT2, or homologues and analogues thereof.

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14. The kit of claim 11 or 12 wherein said protein or proteins is/are selected from the group comprising Rif1, Rif2, Rap1, SIRT1, 3, 4, 5, 6, 7, 8, Est1, Est2, TLG1, cdc13, A26, ATM, HDAC1, hSEP1, hTEP1, HuCds1, MYC, NEK2, p21, PIN2, TNKS, TERC, hTERT, TOP2A, TOP2B, TP53, TRF1, TRF2, and WRN.

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15. A method of treatment of a mammalian donor tissue

to reduce the risk of rejection, the method comprising the step of treating the tissue with an agent to modulate the activity, half-life or expression level of at least one endogenous telomere binding protein.

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16. A method of treatment of a mammalian donor tissue to reduce the risk of rejection, the method comprising the step of treating the tissue with an agent to modulate the effective functionality of at least one endogenous telomere binding protein.

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17. The method of claim 15 or claim 16, wherein the activity, half-life, expression level, or effective functionality of said at least one protein is enhanced.

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18. The method of claim 15 to 17, further comprising the step of treating the tissue with an agent to prevent tissue senescence or cell death.

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19. The method of claim 18, wherein the agent to prevent tissue senescence comprises a calcineurin inhibitor or an analogue thereof.

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20. The method of any of claims 15 to 19, wherein said at least one protein is selected from the group comprising G22P1, XRCC5, hPOT1, and SIRT2, and homologues or analogues thereof.

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21. The method of any of claims 15 to 19, wherein said at least one protein is selected from the group comprising Rif1, Rif2, Rap1, SIRTs1, 3, 4, 5, 6, 7, 8, Est1, Est2, TLG1, cdc13, A26, ATM, HDAC1, hSEP1, hTEP1, HuCds1, MYC, NEK2, p21, PIN2, TNKS, TERC, hTERT, TOP2A, TOP2B, TP53, TRF1, TRF2, and WRN.

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22. The method of any of claims 15 to 21, wherein the treatment of said donor tissue is performed outside the bodies of both the donor and the recipient.

5        23. The use of a mammalian telomere binding protein in the preparation of a medicament for suppression of rejection of a donor mammalian tissue.

10       24. A non-human mammalian donor tissue in which the expression of at least one endogenous telomere binding protein has been modulated.

15       25. The tissue of claim 24 wherein the expression of said at least one protein has been enhanced.

26. A method of assessing tissue damage comprising detecting the accumulation of cytological markers of tissue stress.

20       27. The method of claim 26 wherein the markers are selected from the group comprising senescence associated beta galactosidase (SA beta gal), lipofuscin, advanced glycation end products, and iso-prostanol.